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ABSTRACT

A survey examined perception and use of the services of the Instructional Systems Laboratory (ISL) by the faculty of the University of Minnesota's College of Education. The questionnaire, mailed to all College of Education faculty members, emphasized faculty perception of instructional systems in the following areas: (1) instructional commitment: provision for service, service quality, provision for technology, and financing program; (2) instructional systems: consulting, staffing, planning/design, and use; (3) ISL: accessibility, staff involvement, information dissemination, technology availability, storage and retrieval, equipment maintenance, and production; (4) facilities: physical plant adequacy, environment, furnishing, and availability; and (5) user participation and skills. Based on a 42.9% return rate, results indicate that faculty members did not know enough about ISL to utilize it effectively. The majority of responding faculty members (83.5 percent) use AV equipment to facilitate instruction, though only 58.2% utilized ISL-supplied equipment. Recommended actions to improve ISL contributions include establishment of new goals and objectives, a faculty advisory committee, and a formal plan for interuniversity communication. Recommendations are also provided for programed budgeting, instructional development, administrative adjustments, professional development, and funding. (LMM)

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A STUDY OF THE EFFECTIVENESS OF THE INSTRUCTIONAL SYSTEMS LABORATORY

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College of Education

University of Minnesota

by

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The academic and administrative staff of the College and the Instructional Systems Laboratory have developed a Long Range Plan and Program for the College supporting use of educational technology. The planning effort started when seven broad goals were established as guidelines for the program of the Instructional Systems Laboratory. The College faculty with the aid of the College administration decided to periodically reviewed the plan and recommend adjustments to the program when feasible. (This study is related to one of the ongoing reviews designed to insure that the faculty of the College receives adequate instructional technology support for instruction and research for curriculum, instruction and teaching.) The purpose of the Study was to provide information to administration and faculty about staff perceptions of the services available and/or provided by the Instructional Systems Laboratory operation.

Knowledge about how the University of Minnesota's College of Education faculty perceives and uses the instructional resources of the Instructional Systems Lab (ISL) was needed to plan and develop support for instruction and research. A questionnaire was designed to identify what, when, why

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and how better services for faculty members of the College of Education could be offered. The ISL may be used as a laboratory for Instructional Technology, with a supply of AV equipment, microcomputers and graphic materials or as a support inventory for classroom activity. The staff of the ISL consists of faculty, a director, a coordinator and several graduate assistants who take turns providing the needed service.

The questionnaires were sent (via campus mail), to all College of Education faculty members. A month later, a follow up letter was sent to faculty members encouraging completion if they had not returned the questionnaire. As a result, 91 questionnaires were returned.

The purpose of the questionnaire was to provide faculty and staff members of ISL first hand information about faculty perception of instructional systems in the following areas:

1. Instructional commitment

    A. Provision for service
    B. Quality of service
    C. Provision for technology
    D. Financing program

2. Instructional Systems

    A. Consulting
    B. Staffing
    C. Planning/Design
    D. Use

3. Instructional Systems Laboratory (ISL)

   A. Accessibility

   B. Involvement of ISL staff

   C. Dissemination of information

   D. Availability of technology

   E. Storage and Retrieval

   F. Maintenance of equipment

   G. Production

4. Facilities

   A. Physical Plant Adequacy

   B. Environment

   C. Furnishing

   D. Availability

5. User Participation and skills

RESULTS/FINDINGS

Forty two and nine tenths percent (42.9) of the faculty of the College of Education returned the questionnaire. Eighty three and five tenths (83.5) of the faulty members use AV equipment in the classroom for instruction, 58.2% use equipment supplied by the ISL.

The answer to several questions revealed that 80.2% had experience with instruction using audio visual equipment for classroom teaching but they seldom utilized what they've learned. (e.g. 71.4% can operate a 16 mm motion picture projector but 33% (a majority) use it less than once per month; 56% can operate a video tape recorder, but 60.5% either do not use it or failed to answer this question; 70.3% reported they operated an audio tape recorder, but 31.9% did not answer this question and 27.5% said they use it less than once per month. Fifty nine and three tenths (59.3) percent report they operate a record player and a public address system, but 50.5% never use it in their classes for teaching purposes. Seventy three and six tenths (73.6) percent report they operate a 35mm slide projector, 26.4% never use one in their classes; 74.7% report operating an overhead projector, and 64.8% report they prepare their own projectual transparencies, yet only 27.5% use overhead projectors once per week. Forty four (44) percent do not know how to use a microcomputer while 30.8% use microcomputers professionally; yet 42.9% report never using microcomputers; 63.7% report operating an opague projector, yet 50.5% never use one in classes. It seems that most faculty members operate AV equipment but they seldom use instructional equipment in the classroom for instruction. If they do use AV equipment, they tend to use simple to operate equipment and do not use either antiquated or advance technology. (e.g. microcomputer.)

It seems like most faculty members are not aware of the existence of ISL and even if they are, they do not know how to use the ISL effectively.

Thirty three (33) percent of the faculty reporting indicated that they are not aware of the operating hours of ISL, 30.8% are satisfied with the availability of appropriate instructional technology, whereas 35.2% had no

experience with the variety and quantity of instructional technology from ISL. Forty four (44) percent had no experience with the production of instructional materials, 52.7% had no experience with TV equipment and production for microteaching and 51.6% cannot comment on TV production services due to lack of experience with ISL facilities, 40.7% never asked ISL staff to help resolve problems with classroom use of instructional technology, yet 28.6% evaluated their overall experience with ISL as satisfactory. This statement is confirmed by their comment on reliability of services (28.6% rated ISL services as satisfactory) and 29.7% are satisfied with ease in initiating requests for AV services. As for quality of services, 33% had no experience with assistance from ISL staff (they did not mention why - whether they did not initiate or they could not get help?), 49.5% had no experience in terms of training programs which were initiated by ISL staff, 34.1% had no experience regarding equipment available from ISL, 42.9% had no experience concerning assistance in locating and identifying instructional technology for classroom use, 57.1% had no knowledge about experience with their students' having access to computer terminals; 56% had no knowledge about experience with their student's access to self instructional materials, and 62.6% had no experience with instructional programs distributed by the ISL. Most faculty surveyed were not sure what the term "instructional technology" meant when related to ISL.

In conclusion the survey established the fact that faculty members did not know enough about the ISL to utilize it effectively. Most faculty reporting in the study failed to use AV euqipment supplied by the ISL to facilitate instruction.

A typical respondent's demographic data looks like this:

age	51-60	35.2%
sex	male	69.2%
job title	professor	40.7%
degree	PhD	92.3%
years at U of M	11-15	25.3%
years of teaching experience	26-30	35.2%

SUMMARY

1. Minnesota faculty members use AV equipment for classroom teaching

2. Faculty believe that their department chairman/program head should encourage the use of AV equipment to enhance instruction.

3. Faculty believe that accessibility, availability and proximity are important issues.

4. Faculty can operate various AV equipment with the exception of the microcomputer, but many reporting faculty seldom use AV equipment in the classroom.

5. Faculty believe that instructional technology consultants are important but operators are not needed for classroom application.

6. Most faculty members are very cost conscious.

7. Not too many faculty are aware of the existence of the ISL or use the service of ISL.

8. Faculty have had inadequate experience in the organizational structure, service and equipment availability of ISL!

Discussion/Recommendations

Since most faculty members can operate a variety of AV equipment, the problem with low usage of ISL might be lack of publicity. It is essential that ISL should be introduced and described in faculty meetings. Also, inservice workshops should be used to help faculty members become more aware of the kind of equipment and services available from ISL while upgrading their skills at the same time.

Besides publicity, there are other areas where improvement might be needed:

A. Equipment:

1. Reliable equipment: The equipment should be in working condition, periodic checks or preventive maintenance should be included to ensure that everything is working properly.

2. Keep equipment up-to-date: Replace outdated equipment to keep the ISL holdings up-to-date. However, three problems may hinder application:

a. resistance from users who feel more comfortable with those older models which have faculty user acceptance.

b. lack of appropriately trained personnel who are knowledgeable enough to inservice users.

c. economy as a budgetary constraint might restrict use.

B. Staff

1. The administrative staff should be updated about the pros and cons of the various equipment available in the market, they should be aware of the ISL's immediate and long range goals and ways to determine enabling objectives in terms of purchasing new equipment in order to meet those goals.

2. Professional development should be used to encourage faculty application of technology to instruction by offering periodic workshops (formal or informal) to keep the staff's knowledge base current.

3. Communications strategies should be used where the ISL staff should be able to explain to users alternate ways to incorporate AV equipment in their classroom to maximize the effectiveness of teaching.

4. Reliability, courtesy, and knowledge of instructional technology and its applications should be characteristics ISL staff apply to identified instructional need communicated by faculty and staff.

5. Work relationships of the ISL staff should provide for close cooperation with faculty members to facilitate the use of the ISL and its resources.

6. Lab hours should be fixed hours during which the ISL is opened. During those hours, a knowledgeable staff should be present to provide needed assistance for users who do not feel comfortable or knowledgeable about using various AV equipment.

Where To From Here

A comprehensive examination of the survey results leads these researchers to propose several steps to improve the Instructional Systems Laboratory contributions to the curriculum, instruction, teaching and research in the College of Education of the University of Minnesota. The following actions are recommended as a result of the Study:

1. Establish new written goals and objectives for the Instructional Systems Laboratory services in the College.

2. Establish a faculty advisory committee which is charged with the responsibility for evaluation of educational technology for use by faculty and students in the College. The committee should be appointed by the Dean and should include ISL representation. The committee should be representative of all academic units in the College with special attention from the Teacher Education Program.

3. Establish a formal plan whereby the ISL's chairperson meet with the Dean of College of Education and other senior academic unit chairpersons on a regular basis.

Because the ISL is organized to support the College of Education, it is necessary to insure flow of discussion be representative of faculty interest in media use so that the institution's leadership can realistically attempt to meet the requirement for instructional technology in accordance with the identified Long Range Media Plan.

Each annual budget's objectives should be reviewed with the ISL Director to insure a realistic commitment to instruction by media support services. The work of organizing and developing instructional technology services will proceed most effectively under specilized and centralized leadership. Clear plans and sound organization set the stage for success in meeting defined goals and objectives but the manager must also provide leadership if the people in the organization are to work together to achieve goals. The College's executive leadership must provide adequate funding for auxiliary staff, equipment, materials and facilities to carry out an adequate level of service for the faculty and students enrolled in the College of Education. Certain administrative needs for meeting the staff and community relations program of the institution must also be considered in this commitment. The staff of the ISL must also work cooperatively with the Faculty of the College of Education to meet the demands of the process involving teaching and learning as the University deals with faculty teaching skills from all units representing the institution. Systematic judgements about instructional costs will be rationally examined as an alternative utilized to encourage faculty and students to use instruction technology in the teaching/learning process. Instructional systems will also be encouraged in the academic application of innovation, development and economics for the instructional (curricula) planning process.

PROGRAMMED BUDGETING

To specify the direction in which the instructional systems program is designed to meet the criteria set forth in the long range plan a Planned

Program Budgeting system (PPBS) should be prepared and adopted. Continuity in the budget plan (PPBS) should be stressed. Adoption of the system does not imply that a return to the zero level of budgeting every year is necessary or desirable. The real outcomes that may be expected from the adoption of a PPBS plan is a formal organized approach to providing instructional equipment support services for instruction at the College of Education in accord with the long range plan. The PPBS method of planning oragnizes the presentation of the operational plan of instructional support services so that those services may be effectively measured.

The following actions are recommended to insure formal preparation of the Instructional Systems Laboratory program's budget under the Planned Programmed Budgeting System:

1. Recommendation: Establish a depreciation schedule for all audio visual equipment and materials acquired for ownership by the ISL. The lack of a depreciation schedule for most audio visual equipment does not adequately reflect usable life of equipment and ignors maintenance and updating requirements. Most studies of depreciation involving audio visual equipment used in the collegiate setting recommend periods of 8 to 10 years as an average expected usable life. Most research on usable life of audio visual equipment recommends adoption of a 120 month depreciation life for ISL's audio visual equipment. Microcomputer equipment should use a shorter depreciation life because of the uncertainty surrounding maintenance experience at this time. The selection of a depreciation schedule which more realistically represents the actual performance life of equipment used in the ISL will provide more easily understood rationale for development of educational technology portions of the budget. Considerations for maintenance, alterations, replacement and modifications should be

realistically represented by the recommended procedure. (Inflation may cause a need to apply an index which equates values in budgets from one year to the next.)

Capital investment in newly defined needs for equipment or other types of learning resources will still have to be treated specially when the first decision for addition is made. After adding approved newly defined needs, a depreciation schedule should be provided for the continuation of the obligation for maintenance, alterations, replacement and modification.

2. RECOMMENDATION: Utilize the present audio visual preventive maintenance recording and reporting system for scheduling performance of preventive maintenance. All preventive maintenance reports should be reviewed monthly. Scheduled maintenance, repair and replacement should be guided by use of historical maintenance records. Use should provide planning information necessary for the College staff to respond to equipment casualties and insuring availability of instructional technology when requested.

3. RECOMMENDATION: Expand the student labor recruitment program to including hiring technicians skilled in electronic and mechanical repair. The present stress on hiring graduate students as lab assistants does not emphasize special skills needed by the graduate assistants employed by the ISL. Equipment performance failure reported by faculty on the ISL survey lead these researchers to believe labor supplied through student recruitment was not adequately experienced in their skills to handle repair. The job descriptions furnished by the ISL coordinator for students define the skills needed by the employees of the ISL. The use of graduate students as lab assistants provides students in need of financial

assistance with a work station which trains them to manage an Instructional Development Center and earn part of their school costs.

Using personnel skilled in the electronic and mechanical operation of audio visual equipment should reduce the need for maintenance services scheduled from agencies outside of College of Education. The availability of adequately prepared graduate assistants in the lab pool of ISL will also provide a quick response capability to address audio visual equipment failure causing emergency problems for classroom service. Knowledgeable response to audio visual equipment emergencies by skilled laboratory assistants should reduce faculty frustrations with the response element of the ISL.

4. RECOMMENDATION: Develop a written purchase philosophy which responds to the criteria of quality, performance, maintenance expectations, sources and warranties. The development of such a policy will remove the stigma which has evolved suggesting acquisition of equipment decisions are made for the prestige, convenience and biases of the staff rather than the requirement of the faculty. The "purchase philosophy" for instructional equipment must be in accord with the long range goals and objectives of the ISL and College of Education.

INSTRUCTIONAL DEVELOPMENT

Instructional development involves four concepts; the identification of specific learning objectives, the assessment of learner characteristics, the development of systems to meet the specified learning objectives and

the evaluation of the learning system as well as the learner's progress.

Effective college teaching must be alert to continued change in learner styles. Faculty may be assisted in meeting the instructional demand for innovation and change by planning and using instructional systems services in an instructional develoment model.

The following actions are recommended for implementation of an instructional development model:

1. RECOMMENDATION: Encourage utilization of instructional systems by an instructional development model for the College. Personnel assigned to the ISL should be trained and organized to work with an instructional team in development of a program. Skill in using various teaching strategies as well as knowledge about findings of educational research will assist faculty in validating new appropaches to teaching. With the capability of offering advisory services and production services for faculty and students, the choices available for use of learning resources in improving instruction are conveniently accessible for extensive use in the classroom.

In the opinion of these researchers leadership in the instructional development program should be expected to come from specialized leadership in the College staff. The instructional development model should be encouraged among the faculty by the institution's policy for recognizing innovative and effective performance in teaching. Administration of the program from the ISL would create the climate desirable for encouragement of faculty in using the service. Constant interaction with students using the ISL and team planning with faculty for development of teaching strategies should provide a catalyst which encourages improvement to

instruction.

The ISL should employ professionals who are trained in a graduate schools accredited to offer appropriate degrees preparing an individual to guide an instructional development program. Broad knowledge of instructional systems needed to make media effective learning/teaching resources should be possessed by the professionals who can contribute to effective direction of faculty to the appropriate production service.

2. RECOMMENDATION: Provide a program for temporary utilization of faculty in building and improving their courses by applying media. The purpose of the assignment to the problem of innovating and improving instruction by use of media would encourage a formalized contact with resources of the ISL and the College as well as an opportunity for the faculty to learn how and what the resources might do in their program. Peers of faculty members having the formalized experience may cause them to become motivated and interested in utilizing the ISL's resources in maximizing learning outcomes for students. Faculty development of the use of instructional systems in carrying out the classroom learning/teaching experience will improve utilization of ISL's learning resources investment.

ADMINISTRATIVE ADJUSTMENTS FOR THE ISL

In the opinion of these researchers, some adjustments in the present program of administration in the ISL would provide further efficiencies necessary to meet criteria needed to develop use of the computer in managing ISL. The following actions are recommended to improve utilization

of the computer resources available to the ISL:

1. RECOMMENDATION: Utilization of computer equipment for the advisory, scheduling, and cataloging services would improve the decision making functions in the ISL. Communication with the data base stored in the computer appears to be feasible. The present level of student use appears to be low enough to provide for nominal use of the microcomputer as input/output devices for ISL reporting (administration). Because the computer equipment is in the ISL, it is recommended that ISL personnel be responsible for keying data directly into the computer system. The present availability of computer programs to process inventory and preventive maintenance reporting is acknowledged as unique use of data processing to the ISL management responsibility.

Developing additional computer programming could provide an enhancement of the ISL's need for more complete data processing support in administration. The following resource management of media applications would provide assistance in administering the programs of ISL.

a. Booking and Scheduling of ISL Materials and Equipment with a computer.

b. Cataloging of all resources for easier user access.

c. Develop a bookkeeping system for processing of ISL commitments for access to information needed in reporting status of user demands. The system could also record and report hours worked by assigned student labor more frequently than the present hand system and may reduce the risk of a student failing to cover assigned work hours.

d. Expand the development of automated systems to handle the charge/discharge function for persons using the ISL. Accurate collection

of use statistics in the ISL would assist faculty in guiding the learning experiences of students using the ISL.

e. Adopt a standard holdings code system (i.e. Library of Congress) for resources. Future decision which might suggest that ISL provide access to national information data bases would be well served by standardizing all codes.

2. RECOMMENDATION: Review all business forms used to charge and discharge services for clients of the ISL with the intent of providing better records about use of College resources. Although existing forms appear to be well designed for its stated purpose, these researchers believe use of forms identify the feasibility for assigning a responsibility for security and physical condition of resources loaned to the user.

PROFESSIONAL DEVELOPMENT

Assistance in planning for the use of audio visual resources should be provided by the ISL coordinator and senior staff for principal users. Principal users are represented by deans, directors, chairpersons and unit heads of academic and administrative departments. Services should include cooperative planning for media and its use by the academic departments in support of the curricula, preparation for installation of equipment and/or facilities relative to media, and the preparation of an adequate budget balance between learning resources and other aspects of the College's programs.

The following actions are recommended for the purpose of carrying out

the professional development responsibilities of the ISL:

1. RECOMMENDATION: Provide special seminars, symposia, independent study experiences, or other techniques to develop faculty interest and skill in new teaching strategies which use learning resource materials and educational technology.

2. RECOMMENDATION: Prepare a guide for faculty which inventories the faults and capabilities various campus classrooms present for the use of learning materials and educational technology.

3. RECOMMENDATION: Provide instruction for ISL staff to improve their effectiveness and the ISL's performance in assisting faculty and students in the use of media. The College of Education could contribute significantly to the long range training need.

4. RECOMMENDATION: Devise an evaluation program of classroom facilities, learning materials and educational technology which is utilized by faculty in providing for presentation of material. The evaluation program will provide the College of Education with faculty reactions about learning resources used in the faculty in carrying out instruction. A thorough involvement of faculty in the evaluation program will help faculty develop an understanding of learning resources available from the institution for effective classroom utilization.

THE FUTURE OF THE INSTRUCTIONAL SYSTEMS LABORATORY

The importance of publicizing the ISL ---- increasing usage and

faculty involvement by conducting mini-workshops to inform faculty members about ISL, equipment availability, how to best incorporate equipment available from ISL to maximize effectiveness of teaching are among those things recognized as a pricrity portion of the program. NCATE Guidelines encourage instructional technology programs which develop teaching skills for future teachers. To carry out the intent of these Guidelines requires a strong instructional systems program.

Funding source

To make faculty members of the College of Education believe that ISL is part of the College of Education, the Instructional Systems Laboratory must be a centrally administered unit of the College with participant governance of all faculty. Funding must provide services to all programs with minimal cost. Therefore, all College based funding is mandatory.

Professional technological consultation should be provided by a full-time faculty member should be assigned for the responsibility of coordinating all instructionmal technology resource services, preventive maintenance and emergency problems related to technology. This may help improve quality of service and will provide a specialist for instructional systems courses for all education offerings.

A purchase committee should be formed to provide direction for instructional technology acquisition. (Members should include staff from dean's office, faculty members from College of Education, especially the CISY staff, and the current ISL staff to discuss ways to keep ISL current through acquisition of new equipment and elimination of outdated

equipment.)

A decentralized instructional equipment issuing program should be developed to better serve each building accommodating College of Education course offerings. Equal opportunity for utilization of technology as part of the instructional strategy used by each instructor should be emphasized. Coordinated distribution of resources could provide better access for all faculty in the College.

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